

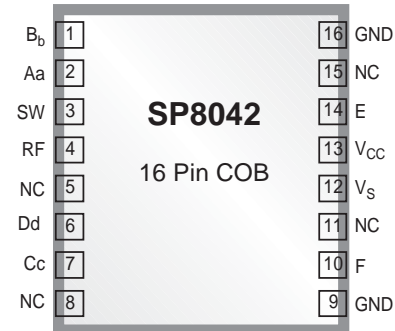
## 7 Channel Photo Detector IC

### FEATURES

- Dual Wave length 650 and 780nm
- 55MHz Data Channel Bandwith
- Built-in Media Switch
- Available in Wafer Form or 5.0 x 4.0mm 16 Pin COB Package

### APPLICATIONS

- DVD Player



### DESCRIPTION

The SP8042 is a seven channel photo detector IC (PDIC) designed for DVD-ROM and CD-ROM applications and can operate at wavelength of 650 and 780 nm. The device contains four photo diode (sensor) arrays, two of them with four identical sensors (A – D, and a - d respectively) and two with a single sensors (E, F). The seven channels consist of four high speed channels (Aa, Bb, Cc, and Dd), two slow channels (E, F), and one RF channel. The high speed channel output provides a signal from one of the two different sensor arrays (A – D or a – d) depending the position of the media switch (SW). A high logic level at the SW pin selects CD mode (A – D sensors) while a low level selects DVD mode (a – d sensors). The E and F channels output is used for a servo control. The RF channels output is sum of A + B + C + D or a + b + c + d channels (depending upon SW level) with identical weights given to all channels.

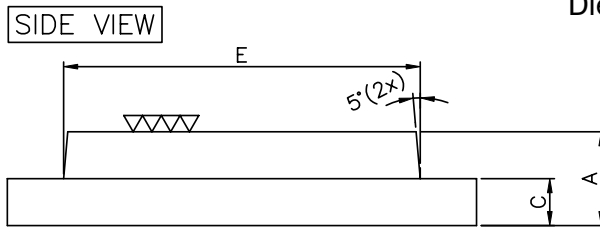
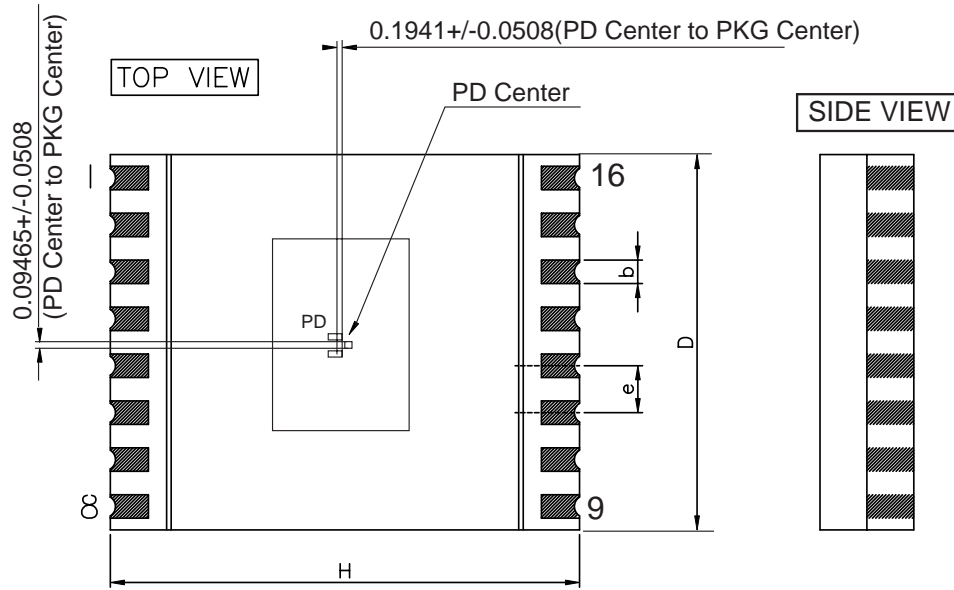
Low noise operation enables data recovery at very low signal levels.  
The SP8042 is manufactured with an advanced 10GHz BICMOS technology.

<b>PIN No.</b>	<b>NAME</b>	<b>DESCRIPTION</b>
1	Bb	Output of Bb channel (B or b sensor output depending upon SW position).
2	Aa	Output of Aa channel (A or a sensor output depending upon SW position).
3	SW	Mode switch input. High logic level selects CD mode, low - DVD mode.
4	RF	Output of RF channel. $RF = A + B + C + D$ or $RF = a + b + v + d$ depending upon SW position.
5	NC	No Connection.
6	Dd	Output of Dd channel (D or d sensor output depending upon SW position).
7	Cc	Output of Cc channel (C or c sensor output depending upon SW position)
8	NC	No Connection.
9	GND	Ground Pin.
10	F	Output of F Channel.
11	NC	No Connection.
12	$V_S$	Reference Voltage. Bypass to GND with ceramic capacitor 0.1 $\mu$ F.
13	$V_{CC}$	Supply Voltage. Bypass to GND with ceramic capacitor 0.1 $\mu$ F.
14	E	Output of E Channel.
15	NC	No Connection.
16	GND	Ground Pin.

**BOARD LAYOUT AND GROUNDING**

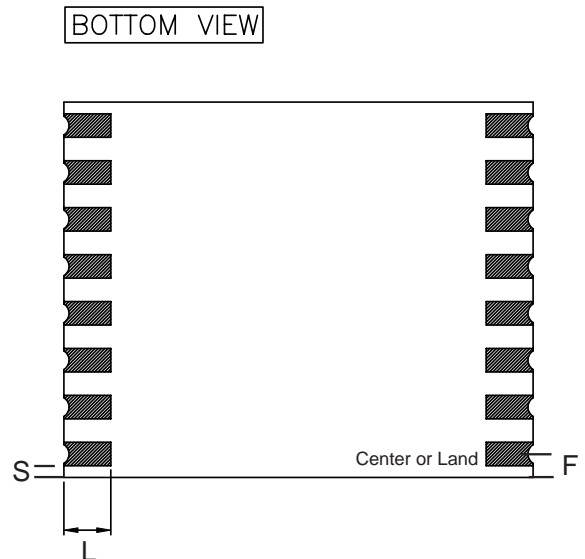
To obtain the best performance from the SP8042, a printed circuit board with ground plane is required. Both ground pins (pins #9 and #16) should be connected to the ground plane. High quality, low series resistance ceramic 0.1 $\mu$ F bypass capacitors should be used at the  $V_{CC}$  and  $V_S$  pins (pins 12 and 13). These capacitors must be located as close to the pins as possible.

The traces connection the pins to the ground plane,  $V_{CC}$ ,  $V_S$ , and bypassing capacitors must be kept short and should be made as wide as possible.



Die Center at 0.05285mm, - 0.06165mm

SYMBOLS	MIN	NOM	MAX
A	0.85	0.95	1.05
b	0.20	0.25	0.30
C	-	0.40	-
D	3.90	4.00	4.10
E	3.70	3.80	3.90
e	-	0.50	-
H	-	5.00	-
L	0.60	0.70	0.80
F	0.17	0.25	0.33
S	0.02	0.10	0.18



## 16 Pin COB

<b>Part Number</b>	<b>Temperature Range</b>	<b>Package Type</b>
SP8042DB .....	-30°C to 80°C .....	16 Pin COB
SP8042W .....	-30°C to 80°C .....	Wafer

**ANALOG EXCELLENCE****Sipex Corporation****Headquarters and  
Sales Office**

233 South Hillview Drive  
Milpitas, CA 95035  
TEL: (408) 934-7500  
FAX: (408) 935-7600

**Sales Office**

22 Linnell Circle  
Billerica, MA 01821  
TEL: (978) 667-8700  
FAX: (978) 670-9001  
e-mail: sales@sipex.com

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